

California Monthly Climate Summary February 2013

Weather Highlights

February 2013 was a cool and dry month for California. According to the Western Region Climate Center's [California Climate Tracker](#), the monthly average temperature was 39.9°F which is 1.6°F lower than the long-term average of 41.4°F. With a statewide average of 0.52 inches, precipitation in February was only 14% of average. This is the second driest February in the California Climate Tracker which extends back to 1895. The only drier year was 1964 when only 0.43 inches was recorded. Regional maximum and minimum temperature and precipitation plots for the December through February time period are shown at the end of the document. Normally this is the wettest time of year for California, but water year 2013 was below average.

February started with high pressure and above normal temperatures covering most of the State. Offshore flow dominated the south coast region for the first part of the week, but a weak disturbance at the end of the first week brought light showers to the Southern part of the State. In the second week, a low pressure system dropped out of the northeast Pacific bringing some rain and cooler temperatures to the State. Frost issues cropped up in the cool dry air that moved in behind the low. A large high pressure system dominated the entire State in the third week keeping things dry and cool. The month closed out with a couple of systems dropping through the State bringing unsettled weather that spawned thunderstorms and a few tornadoes in the Central Valley. Snow levels were as low as 2000 feet with snow on the Grapevine in Southern California. Following these systems temperatures quickly returned to normal.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 62 temperature records tied or broken and 3 precipitation records tied for the month. Of the 62 temperature records set, 30 were for new low maximum temperatures and 21 were for new low minimum temperatures. Records were set over 15 days of the month. Barstow-Daggett Airport set a new high snowfall total on February 25th when 0.1 inches of snow fell breaking the old daily record of a trace set back in 1947. For the 25th time since records started being kept at Furnace Creek Death Valley in 1912, no precipitation was recorded in February. Bishop also recorded no precipitation in February which ties 1972 and 1974 for lowest February precipitation totals. Records at Bishop date back to 1944.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 221 stations recorded a minimum temperature below freezing in February while zero stations reached or exceeded 100°F at least once during the month. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC stations is also shown at the end of the summary.

Precipitation in February ranged was dry across the State. For the CDEC precipitation gages for February 2013, the largest amount of precipitation recorded was at Gasquet Ranger Station in the North Coast region with 4.62 inches. This is only 39% of the average precipitation for this station for February. At the other end of the spectrum, 7 stations recorded no precipitation for the month. For the CIMIS network, West Hills in Los Angeles County topped the precipitation charts with 1.15 inches for the month and 13 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network.

The 8-Station Index for northern California precipitation recorded 0.8 inches in February. On average, 8.0 inches of precipitation is recorded for the 8-Station index for the month. For the combined January and February total, the 8-Station Index is 2.2 inches which is the lowest Jan-Feb total in the period of record which dates back to water year 1921. The previous record was 3.99 inches set in 1991. Statewide, the average precipitation for the month was 17.3% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document.

CoCoRaHS Update

February 2013 continues California's fifth year with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns. A map from February 20, 2013 is shown at the end of the document. As of the end of February, California has 1002 volunteers signed up spanning 53 of California's 58 counties. The counties without volunteers are Alpine, Colusa, Glenn, Modoc, and Tuolumne. The county with the most volunteers at the end of February is Sonoma with 93 volunteers. For the month of February, 9,563 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in February was in Butte County where 1.50 inches was recorded on 02/19/2013. There were 118 snowfall reports recorded with the largest being 11 inches in Placer County. The largest total depth of snow reported in February was 62 inches in Placer County. Eleven hail reports were submitted in February in Butte (1), Placer (1), Humboldt (1), Los Angeles (1), Riverside (2), Sacramento (1), San Bernardino (1), Santa Cruz (2) and Shasta (1). The largest stone size reported was 3/8" sized. To join CoCoRaHS or find more information, please visit <http://www.cocorahs.org>.

Snowpack and Water Supply Conditions

At the end of January the Northern region snowpack held 18 inches of snow water equivalent (SWE) which is 62% of the April 1st average and 70% of the average for the date. The Central region SWE was reported to be 18 inches which is 58% of the April 1st average and 67% of the average for the date. The Southern region SWE was reported to be 13 inches which is 51% of the April 1st average and 60% of the average for the date. The Water Supply Index (WSI) for WY2012 for the Sacramento Basin

fell into the below normal category and the San Joaquin fell into the dry category. The median forecast for the WSI for the Sacramento and San Joaquin Basins is the below normal category. More information can be found at http://cdec.water.ca.gov/water_supply.html. A historical listing of water year categories for both basins can be found at <http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST>.

Extreme Precipitation Monitoring Network

The National Oceanographic and Atmospheric Administration (NOAA) Earth System Research Laboratory (ESRL), Scripps Institute of Oceanography, and the California Department of Water Resources have been working on the installation of new observing equipment to monitor characteristics of extreme precipitation events associated with atmospheric rivers. Initial data is starting to flow from this network. No extreme precipitation events occurred in February 2013 where the network components are installed. Data can be viewed on the NOAA ESRL website: <http://hmt.noaa.gov> and will be available later this year on the California Data Exchange Center.

Drought Monitor and Seasonal Outlook

The maps for California for January 29, 2013 and February 26, 2013 are shown below. The Drought Monitor maps can be found on the National Drought Mitigation Center's (NDMC) website <http://drought.unl.edu/dm/>. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the February 26th depiction, 26.96% of California is depicted in the D2 or severe drought category, 20.17% of California is depicted in the D1 or moderate drought category. An additional 52.85% of the state is depicted as D0 or abnormally dry. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for April through June from NOAA depicts California in persisting or developing drought throughout most of the state. This forecast is based primarily on climatology and forecast models. Maps and information can be found at

http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html.

Updates are provided twice per month.

For more information on water conditions in California, visit

<http://www.water.ca.gov/waterconditions/>. A table showing end-of-February reservoir storage by hydrologic region is shown at the end of this document.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is currently in neutral conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have been mostly negative with values of -0.5°C in the Niño 3.4 at the end of February. The December through February 3-month running mean of the Ocean Niño Index (ONI) is -0.6. Five

consecutive ONI values need to be below the threshold of -0.5 for conditions to be classified as a La Niña event (five consecutive values above the 0.5 threshold need to be observed for classification as an El Niño event). Most forecast models have the tropical sea surface remaining near neutral conditions for the rest of the calendar year. More information can be found at the Climate Prediction Center's web site:

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

Updates are posted weekly. The latest three month outlook (March through May) from NOAA indicates a higher probability for below normal temperatures for the North Coast and equal chances of above or below normal temperatures for the rest of the State with the exception of the southeastern deserts which have a higher probability of above normal conditions. For precipitation, a higher probability of below normal conditions is forecast for the entire State. Outlook plots and discussions can be found at <http://www.wrcc.dri.edu/longrang/>. General weather information of interest can be found at <http://www.noaawatch.gov/>. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

February 2013 saw harvests, tree blooms, and frost protection measures in action. Dry conditions forced irrigation for some crops during the month. Citrus harvests continued with tangerine harvest nearing completion. Almond orchards started their bloom near the end of the month while winter pruning and other orchard maintenance activities occurred in walnut and pistachio orchards. The first planting of summer vegetables was delayed. Broccoli, cabbage, and cauliflower were grown and harvested. Bed preparations continued for crops such as melons, squash, tomatoes, carrots, and peppers. Range conditions were reported as fair and supplemental feeding continued. Bees actively worked the almond and early fruit blooms. For further crop information see <http://www.nass.usda.gov/index.asp>.

Other Climate Summaries

[California Climate Tracker](#) (new product of Western Region Climate Center)

[Golden Gate Weather Service Climate Summary](#)

[NOAA Monthly State of the Climate Report](#)

Statewide Extremes (CDEC)

High Temperature – 87°F (Beverly Hills, South Coast)

Low Temperature – -9°F (Tunnel Guard Station, Tulare)

High Precipitation – 4.62 inches (Gasquet Ranger Station, North Coast)

Low Precipitation – 0.0 inches (7 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 73.8°F (Salton Sea East, Imperial County)

Low Average Minimum Temperature – 15.4°F (Big Bear Lake, San Bernardino County)

High Precipitation – 1.15 inches (West Hills, Los Angeles County)*

Low Precipitation – 0 inches (13 stations)

*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Feb	Oct-Feb	Stations	Feb	Oct-Feb	Feb	Oct-Feb
North Coast	0.27	5	5	5	17	13	11	23.0%	89%
SF Bay	0.03	2	2	2	6	6	4	14.0%	96%
Central Coast	0.06	3	3	3	11	8	6	10.9%	66%
South Coast	0.06	3	3	3	14	12	11	19.4%	51%
Sacramento River	0.26	5	5	5	41	37	37	11.6%	94%
San Joaquin River	0.12	6	6	6	24	20	17	15.1%	80%
Tulare Lake	0.07	5	5	5	28	28	26	36.2%	66%
North Lahontan	0.04	3	3	3	13	11	11	14.1%	85%
South Lahontan	0.06	3	3	3	15	10	10	9.1%	37%
Colorado River	0.03	1	1	1	6	4	4	12.3%	75%
Statewide Weighted Average	1	36	36	36	175	149	137	17.3%	80.5%

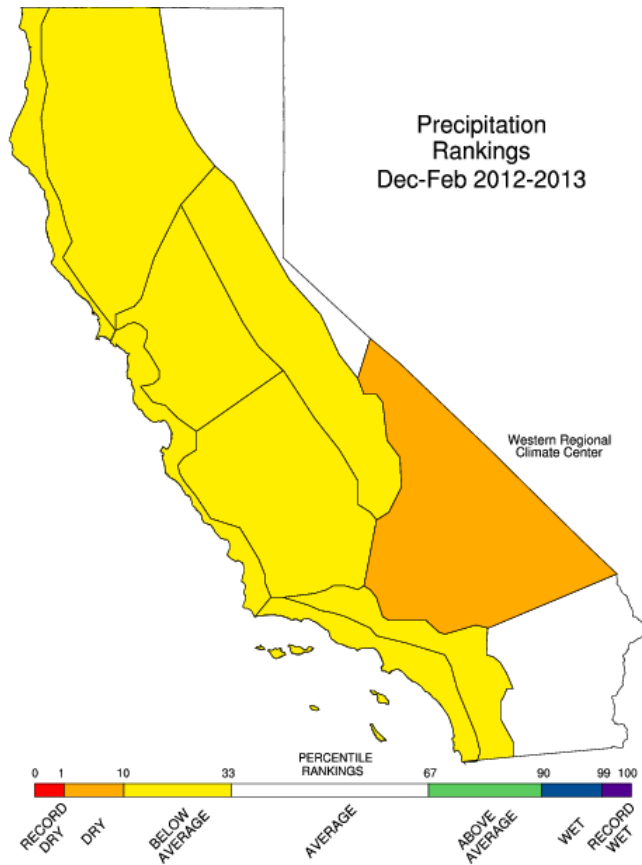
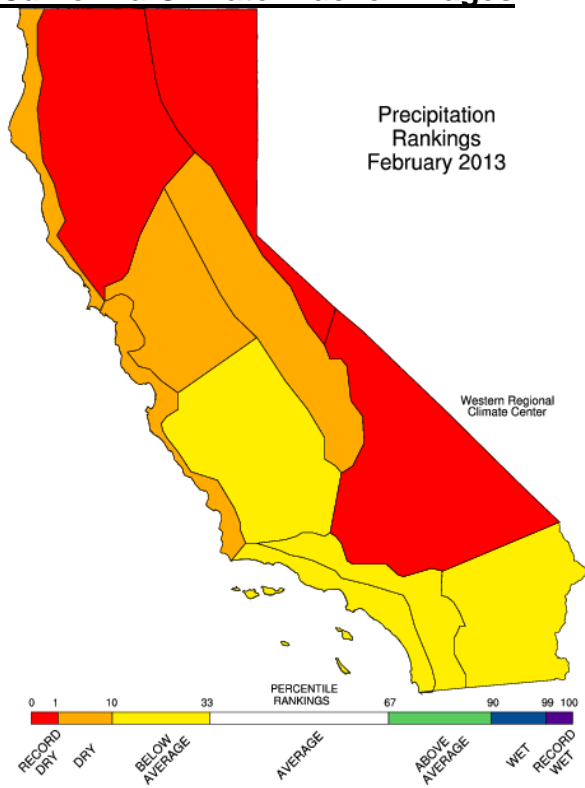
Statewide Mean Temperature Data by Hydrologic Region (degrees F)

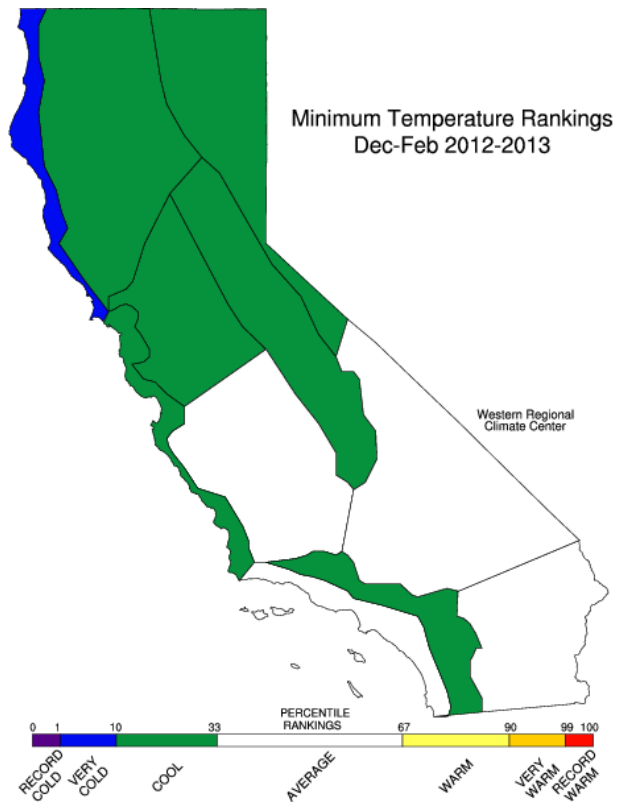
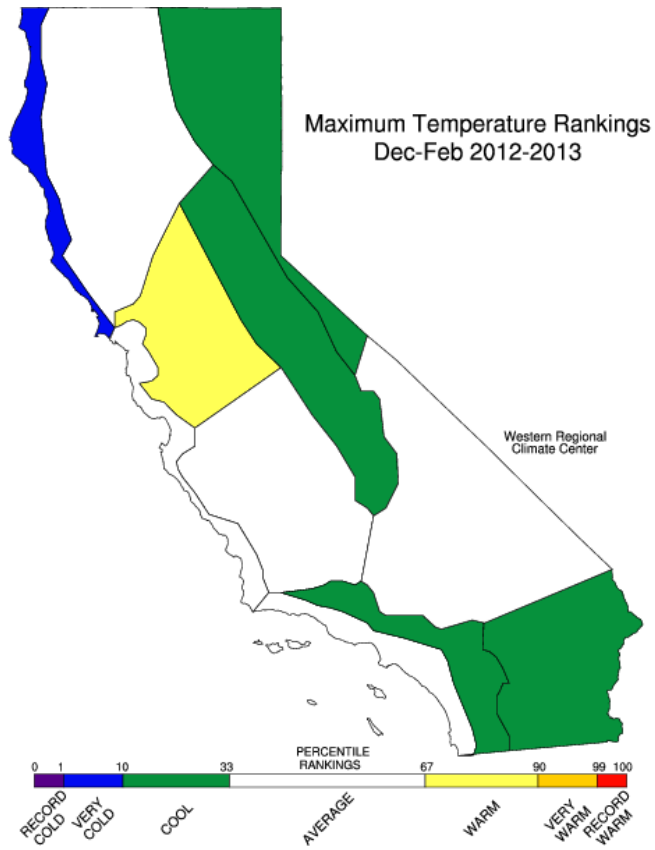
Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	19	23.2	39.5	64.9
SF Bay	9	31.2	47.5	67.0
Central Coast	12	27.9	46.8	74.0
South Coast	37	29.6	49.9	75.3
Sacramento	77	21.9	40.3	65.5
San Joaquin	44	18.3	37.6	63.4
Tulare Lake	17	12.2	31.7	55.7
North Lahontan	25	7.9	28.8	52.5
South Lahontan	13	11.5	33.9	59.3
Colorado River Desert	7	35.1	55.6	78.9
Statewide Weighted Average	260	21.5	39.9	65.1

End-of-February Reservoir Storage by Hydrologic Region
Storage in Thousand Acre-Feet (taf)

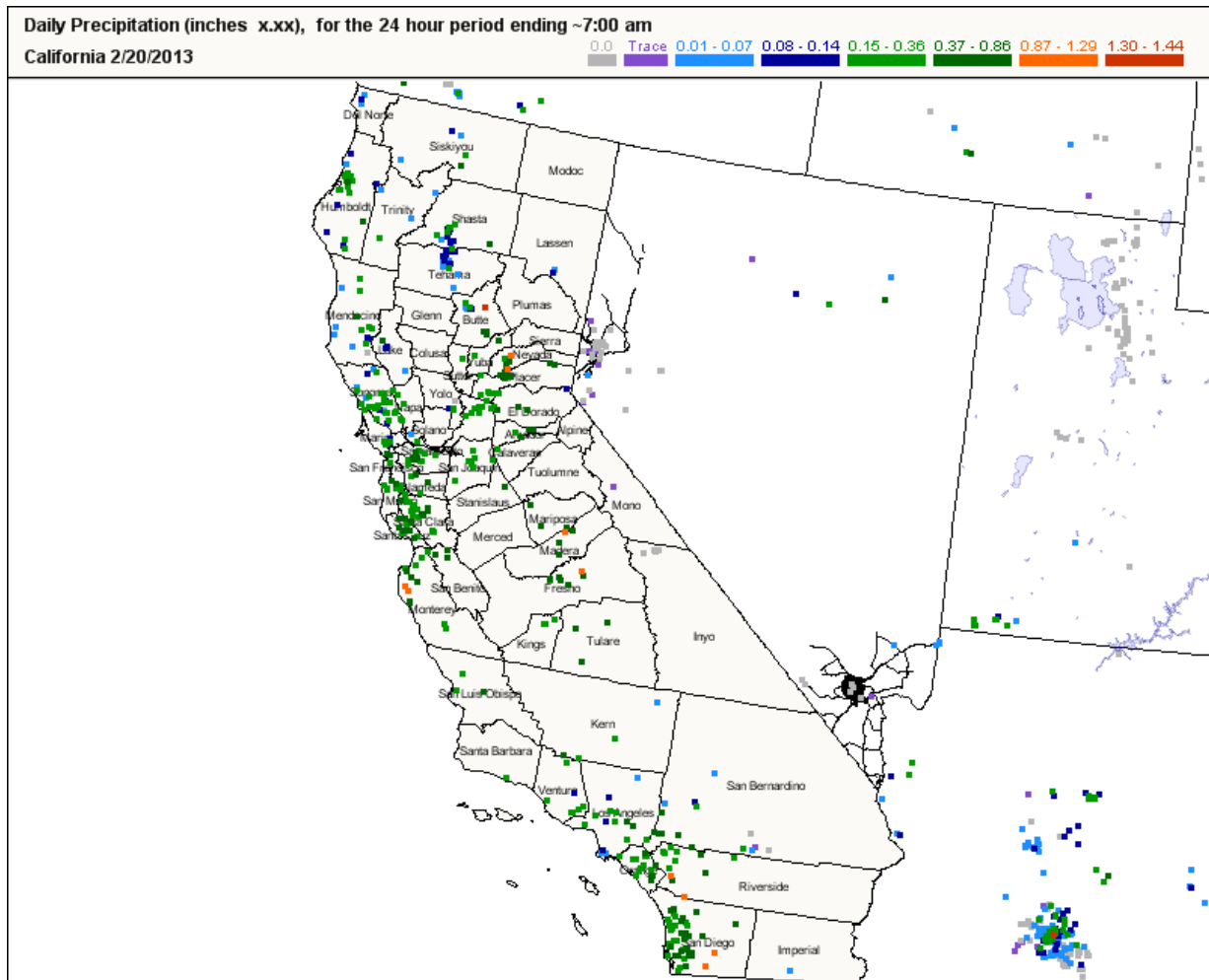
End-of-February Reservoir Storage	Number of Reservoirs	Average Storage (taf)	2013 Storage (taf)	% of Average
North Coast	6	2224	2,390	107%
San Francisco Bay	17	505	448	89%
Central Coast	6	656	542	83%
South Coast	29	1,447	1,212	84%
Sacramento	43	11,244	12,192	108%
San Joaquin	34	7,211	6,982	97%
Tulare	6	840	534	64%
North Lahontan	5	526	557	106%
South Lahontan	8	267	249	93%
Total	154	24,924	25,110	101%

California Climate Tracker Images





CoCoRaHS Map



U.S. Drought Monitor

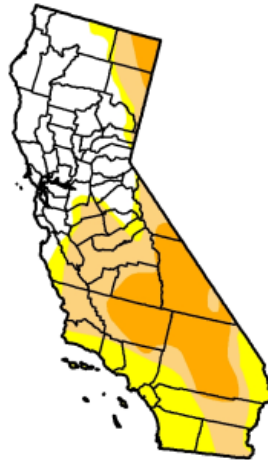
California

January 29, 2013
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.20	65.80	47.18	21.57	0.00	0.00
Last Week (01/22/2013 map)	34.20	65.80	53.58	21.57	0.00	0.00
3 Months Ago (10/30/2012 map)	6.73	93.27	68.48	19.10	1.14	0.00
Start of Calendar Year (01/01/2013 map)	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago (01/24/2012 map)	19.12	80.88	41.23	0.00	0.00	0.00

Intensity:

D0 Abnormally Dry	D3 Drought - Extreme
D1 Drought - Moderate	D4 Drought - Exceptional
D2 Drought - Severe	



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, January 31, 2013
Mark Svoboda, National Drought Mitigation Center

U.S. Drought Monitor

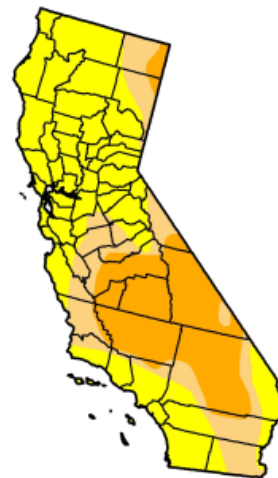
California

February 26, 2013
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.02	99.98	47.13	26.96	0.00	0.00
Last Week (02/19/2013 map)	15.45	84.55	47.18	23.72	0.00	0.00
3 Months Ago (11/27/2012 map)	6.77	93.23	70.47	28.16	1.14	0.00
Start of Calendar Year (01/01/2013 map)	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago (02/21/2012 map)	4.77	95.23	67.76	5.06	0.00	0.00

Intensity:

D0 Abnormally Dry	D3 Drought - Extreme
D1 Drought - Moderate	D4 Drought - Exceptional
D2 Drought - Severe	



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, February 28, 2013
Brian Fuchs, National Drought Mitigation Center